

EPA COMMENTS – AUGUST 3, 2016

Lower Passaic River Study Area River Mile 10.9 Removal Action Long-Term Monitoring and Maintenance Plan

Revision 2

Dated April 2016

<u>No.</u>	<u>Page No.</u>	<u>Specific Comments</u>
1	1.0 Introduction, Page 1-1, second paragraph	Modify the text in this paragraph to briefly discuss that the TCRA involved removal of contaminated sediments via dredging and the placement of a reactive armored cap
2	1.0 Introduction, Page 1-1, third paragraph	<p>Revise the first sentence to read “This RM 10.9 LTMMP is being implemented to monitor the protectiveness and integrity of the engineered reactive cap.”</p> <p>Revise the last sentence of this paragraph to read “This RM 10.9 LTMMP and its monitoring techniques and frequency do not necessarily reflect the long-term monitoring approach that will be applied to the overall Lower Passaic River remedy.”</p>
3	1.0 Introduction, Page 1-1, fourth paragraph, second sentence	The text in the parentheses states “(approximately one year after cap completion)”. Please modify the text to reflect that two attempts were made within approximately 18 months after cap completion to install the ten samplers, and these attempts were unsuccessful. Furthermore, the text should note that a third attempt will be made approximately two years following cap construction. These changes need to be made throughout the document. This revised text will help future document reviewers to understand why the first complete porewater sampling results were not obtained until approximately two years after cap placement.
4	1.0 Introduction, Page 1-1, fourth paragraph, first sentence	Revise the last paragraph of this section to begin with: “This LTMP has been updated from the prior version submitted to Region 2 (CH2M Hill, 2013a) to incorporate chemical monitoring, to assist with evaluations on whether the engineered cap is functioning as designed. This version is also amended to include the RM 10.9 Post-Construction monitoring Quality Assurance Project Plan (QAPP)....”.

5	1.0 Introduction, Page 1-1, fourth paragraph, last sentence	Revise the text to state “The QAPP will be updated for the subsequent events, as necessary, based on the results of previous monitoring events and potential advancements in cap monitoring technologies and techniques.”
6	1.1 Project Description, Page 1-1, first paragraph	Please edit the text in this paragraph to include the primary COPCs or, alternatively, the primary classes of COPCs.
7	1.1 Project Description, Page 1-1, second paragraph	For clarity, revise the first sentence to read “A small portion of the RM 10.9 TCRA project area shoreline (i.e., the northeastern most end of the removal area) was found to be a rock stabilized slope with pockets of sediment.” Also, if known, briefly describe why this rock was placed for stabilization (e.g., bend in river, pipe discharge point, etc.).
8	1.1 Project Description, Page 1-1, second paragraph	For clarity, revise the second sentence to read “While the original TCRA design (CH2M Hill, 2013b) determined that these areas could not be capped due to the grade of the existing slope, additional field investigation also indicated this area could not be dredged without removing the rock armor and potentially destabilizing the slope.”
9	1.1 Project Description, Page 1-2, second sentence	Provide clarification for the reader as to what is meant by “high” sub-grade areas.
10	1.1 Project Description, Page 1-2, last sentence	Revise this statement to read “The Jersey City Municipal Utilities Authority agreed to a dredging offset of 30 feet from each of the two potable water supply lines that transect the RM 10.9 Removal Area in its May 2, 2013 letter.”
11	1.2 Site Background, Page 1-2, second paragraph, last sentence	Provide clarification in the text on what is meant by “various engineering design packages”.

12	2.1 Active Cap Layer, Page 2-1, second paragraph, first sentence	<p>a) Regarding “As discussed further in the Final Design...”, please provide a reference to the Final Design Report (CH2M Hill, 2013b) in the text, if it is the proper citation</p> <p>b) Name the cap model and version used in these efforts and the project document which details these modeling efforts.</p>
13	2.1 Active Cap Layer, Page 2-1, second paragraph, last sentence	<p>Regarding the text that states: “During construction, placement of an active layer at a 30/70 percent blend of AquaGate+PAC™ and sand ensured that the minimum dosage as represented in the cap model (based on a 25/75 percent blend) was attained.” As noted in EPA’s comments on the draft Final Construction Report, the actual placement of AquaGate+Pac was not uniform throughout the removal area. The ration north of the utility crossing was greater than 30 percent AquaGate and the ratio placed south of the utility crossing was less than 30 percent.</p> <p>Provide clarification in the text as to how the minimum dosage of a 25/75 blend was empirically confirmed after placement. E.g., were post-construction confirmation cores taken and subsampled? Please also provide a document reference for such dosage confirmations. An understanding of the as-constructed amendment dosage, including any observed variations in dosage across the cap, will help future parties to better comprehend any observed discrepancies between the observed porewater contaminant concentrations and the CAPSIM model projections.</p>
14	2.3 Armor Layer, Page 2-2, last paragraph	Remove this statement from this section, as this section pertains to the cap design summary.
15	2.4 High Sub-grade Areas, Page 2-2, second paragraph, first sentence	<p>The text states that the high sub-grade “covers only thin amounts of residual sediment”.</p> <p>Revise this statement to read “this cap type covers only thin amounts of residual sediment”, if appropriate.</p>

16	2.5 Cap Construction Summary, Page 2-2, first paragraph, first sentence	<p>The text states “...the design-specified minimum thickness and minimum average thickness were achieved in all cap areas for both the active layer and armor layer.”</p> <p>As noted in EPA’s comments on the draft Final Construction Report, the minimum average thickness was achieved on a site-wide basis but not in all areas of the cap.</p> <p>Provide clarification as to how the achievement of design-specified minimum thickness and minimum average thickness was empirically determined. This information will help guide future sampling and inspection efforts at the cap.</p>
17	2.5 Cap Construction Summary, Page 2-2, first paragraph, second sentence	<p>Provide the standard deviations of the average thicknesses presented. The standard deviations will aid the reader in understanding the degree of cap thickness variation at RM 10.9 and help guide future sampling and inspection efforts at the cap.</p>
18	2.5 Cap Construction Summary, Page 2-2, third paragraph, first sentence	<p>The text states that the minimum activated carbon dosage “was achieved throughout the cap area based on material ratio testing conducted by the engineer and contractor”.</p> <p>Provide clarification as to how the proper dosage was empirically determined to be in the cap following construction. An understanding of the as-constructed amendment dosage, including any observed variations in dosage across the constructed cap, may help future parties to better comprehend any discrepancies between the observed porewater contaminant concentrations and the CAPSIM model projections.</p>
19	3.1 Monitoring Objectives, Page 3-1, second paragraph	<p>Revise the first sentence to read “Chemical monitoring of porewater contaminant concentrations will also be performed to evaluate if the cap is functioning as designed.”</p>
20	Section 3.1 Monitoring Objective, footnote 1	<p>Remove the phrase “However, these values do not represent long term cap effectiveness criteria, which are typically represented as sediment concentrations that should not be exceeded within the biotic zone at the surface of the cap.” from Footnote 1.</p>
21	3.2 Monitoring Approach, Page 3-1, first paragraph	<p>Change the term “in-river construction activities” to “anthropogenic disturbances”. This change should be made universally throughout the entire document.</p>

22	3.2 Monitoring Approach, Page 3-2	The text “approximately one year” should be revised to reflect that it is almost 2 years after cap construction now. This change should be made universally throughout the entire document as necessary.
23	3.2 Monitoring Approach, Page 3-2, last paragraph	The text “Modifications of the routine cap monitoring program will be evaluated after the Year 5 event and/or when a long-term monitoring plan is adapted for the larger LPRSA” should read “and/or as porewater monitoring techniques and technologies advance.” Modifications prior to the Year 5 event if there are advancements in the science of monitoring should not be precluded. This change should be made universally throughout the entire document as necessary.
24	3.2.1 Routine Physical and Chemical Monitoring, Page 3-2, first paragraph	Please modify the text to discuss or reference the surveys (i.e., probing and bathymetry) conducted to date, as this information may help to inform future surveys.
25	3.2.1 Routine Physical and Chemical Monitoring, Page 3-2, second paragraph	The last sentence states the monitoring is to take place in “Years 1 and 5”. Please modify the sentence to reflect the delays in the sampling program, as the first two passive sampler installation attempts were not successful, and it has been approximately 2 years since construction of the cap. This revision needs to be changed universally throughout the entire document.
26	3.2.2 Event-Based Physical Monitoring, Page 3-2, second paragraph, first sentence	Provide the rationale in the text for performing monitoring after the 50-year storm, as opposed to some other return interval frequency storm.
27	3.2.2 Event-Based Physical Monitoring, Page 3-2, second paragraph	<p>The text states that “If the cap is shown to remain intact following the 50-year return period flow event, future event-based monitoring will only be triggered each time the 100-year flow event is exceeded.”</p> <p>Provide rationale for why if the cap remains intact following a 50-year return period flow event, the subsequent monitoring events will only follow 100-year flow events. E.g., the cap remaining intact following a 50-year flow event does not necessarily equate to the cap remaining intact after a 51-year flow event. EPA</p>

		recommends keeping the trigger condition of a 50-yr event “constant” into the future.
28	3.2.2 Event-Based Physical Monitoring, Page 3-2, third paragraph	Revise the text to read “In addition to flow events, nearby in-river construction activities (e.g., bridge or utilities) or anthropogenic disturbances (e.g., vessel grounding) that could directly or indirectly negatively impact the cap’s physical integrity and/or cause significant cap erosion can trigger monitoring.”
29	3.2.2 Event-Based Physical Monitoring, Page 3-3, first sentence	Add the text “...and discussion with EPA Region 2.” to the end of this sentence.
30	3.2.2 Event-Based Physical Monitoring, Page 3-3, second sentence	Remove this sentence. Any observed significant change should trigger probing and/or further investigation because, as the CPG has previously stated, most settlement of the cap would be expected to occur in the first year following construction.
31	4.1 Bathymetric Surveys, Page 4-1, first paragraph	Revise the text to note that if more accurate survey methods become available and are implementable at RM 10.9, that they will be used to help reduce the uncertainty associated with the currently accepted bathymetric measurements of cap elevation.
32	4.2 Probing, Page 4-1	Revise the title of this section to “Probing and Poling”
33	4.2 Probing, Page 4-1, first paragraph, third sentence	Clarify in the text what is meant by “probing” as opposed to “poling”. I.e., what is the difference between the two?
34	4.3 Armor Layer Assessment, Page 4-2, first paragraph, first sentence	Revise the text to state “Visual inspections and bathymetric changes over time will be used to identify potential changes in the physical integrity of the armor layer or the overall cap.”

35	4.3 Armor Layer Assessment, Page 4-2, first paragraph, second sentence	Remove the sentence “During interpretation of the bathymetric survey data, consolidation of soft sediment beneath the engineered cap will also be considered.” Or revise to also include a statement as follows: “However, it is anticipated that the majority of cap consolidation is anticipated to occur in the first year following construction.” (as the CPG has previously stated)
36	4.3 Armor Layer Assessment, Page 4-2, second paragraph	The text states that an area “greater than 5 percent of the total cap area” showing significant erosion will be used as a trigger for further assessment. Provide rationale for why 5% of the total cap area was chosen as a trigger (e.g., as opposed to some other percentage of the total cap area).
37	4.3 Armor Layer Assessment, Page 4-2, third paragraph, third sentence	Revise the text “...then the drop in cap elevation is attributed to cap consolidation” to read as follows “...then the drop in cap elevation could be attributed to cap consolidation.”
38	5.0 Chemical Performance Monitoring, Page 5-1, first sentence	Revise the text to read as follows “Chemical performance monitoring will be conducted to determine if the cap chemically isolates the environment from COPCs remaining in the post-dredge sediments.”
39	5.1 Porewater Sampling, Page 5-1	Revise this section to include a brief discussion that due to field constraints including the presence of the armor stone layer, a three sampler arrangement was utilized.
40	5.1 Porewater Sampling, Page 5-1, second paragraph	The May 2013 RM 10.9 Removal Action Final Design Report, section 7.2.2.1, Cap Performance Model, states: “Four COPC groups, characterized by a representative chemical constituent, were included in the CapSim modeling activities: dioxins/furans (2,3,7,8-TCDD), total PCBs (PCB-52), PAHs (phenanthrene), and mercury. The representative chemical constituent for each COPC group was selected for its toxicity and/or mobility.” Revise the text to include the reasoning behind why mercury is not included as a COPC for chemical porewater monitoring.
41	5.1.1 Passive Sampling Methods, Page 5-1	Revise this section to include a brief discussion that, ideally, co-located cores would be collected in addition to the passive porewater measurements, but that the cores were not taken due to field constraints.

42	5.1.1 Passive Sampling Methods, Page 5-1, first paragraph	Revise the first sentence to read "As directed by Region 2, passive in-situ porewater sampling methods will be used during the routine chemical monitoring activities to detect and quantify porewater concentrations of select COPCs within the cap and underlying sediments."
43	5.1.1 Passive Sampling Methods, Page 5-1, second paragraph, third sentence	<p>Regarding "When these fibers are exposed to the media (e.g., porewater) organic COPCs present in the media partition onto the coating until equilibrium is attained."</p> <p>Please revise this section and associated sections to account for the following information: Equilibrium partitioning can be affected by a host of factors, and cannot be empirically determined in SPME fibers without the use of performance reference compounds (PRCs) and/or co-located sediment cores. Revise this section to include a brief discussion of PRCs as well as a statement or discussion explaining that PRCs were not used for this monitoring as the CPG determined that PRCs could not be implemented in the time available before sampling. Therefore, a 60-day deployment was selected to increase the chances of the SPME fibers coming into equilibrium with the porewater COPC concentrations.</p>
44	5.1.1 Passive Sampling Methods, Page 5-1, second paragraph, last sentence	Delete the last sentence of this paragraph. See also Comment 40 above.
45	5.1.1 Passive Sampling Methods, Page 5-1, third paragraph, second sentence	Revise this statement per Comment 40 above.
46	5.1.1 Passive Sampling Methods, Page 5-1, third paragraph, second sentence	Modify the text to read "...then the polymer sorbent concentration can be used to estimate the porewater concentration if reliable partition coefficients for the polymer are available"

47	5.1.1 Passive Sampling Methods, Page 5-2, first paragraph, third sentence	Regarding “The thin polymer coating on the SPME fiber usually equilibrates within a few weeks and negligibly depletes the surrounding porewater of COPCs.” Provide references in the text to support the suggested equilibration time and negligible depletion statements, given the particular sampling apparatus/arrangement deployed at RM 10.9.
48	5.1.1 Passive Sampling Methods, Page 5-2, first paragraph, fourth sentence	Regarding “The COPCs are expected to be fully equilibrated within 30 days.” Provide rationale in the text for this statement. Also see Comment 41 above.
49	5.1.1 Passive Sampling Methods, Page 5-2, first paragraph, fifth sentence	Revise this statement per Comment 41 above.
50	5.1.1 Passive Sampling Methods, Page 5-2, second paragraph	Provide clarification in text as to what is meant by “maximize sorption”.
51	5.1.2 Sample Locations and Depths, Page 5-2, first paragraph, first sentence	Revise the document to note that field conditions and the CPG’s stated field constraints and health and safety requirements may require modifying the preselected sample locations.

52	5.1.2 Sample Locations and Depths, Page 5-2, first paragraph	<p>Regarding “Three additional locations requested by Region 2, for a total of up to ten locations, were included in the initial event.”</p> <p>Remove the portion of the statement “Three additional locations requested by Region 2, for”. EPA selected additional locations using the same lines of evidence as the CPG.</p> <p>Furthermore, this section needs to be revised to reflect that if during either the routine long term monitoring or event-based monitoring a breach in the integrity of the cap is identified, the plan should allow for additional sampling in areas other than the currently-designated 10 locations. This provision will need to require an evaluation of the changed cap conditions to determine the best locations for sampling. Revise the section accordingly.</p>
53	5.1.2 Sample Locations and Depths, Page 5-2, first paragraph, fourth sentence	Describe the metal plates and their use in re-occupying sample stations in the future in more detail in this section.
54	5.1.2 Sample Locations and Depths, Page 5-2, second paragraph, second sentence	Revise to include the following statement and provide rationale for this statement: “Based on the results of the preliminary probing conducted in April 2015 and the presence of the armor and geotextile layers in the cap design, insertion of the samplers using either a boat-based platform or divers was deemed not feasible by the CPG because...”
55	5.1.2 Sample Locations and Depths, Page 5-2, second paragraph, last sentence	Revise this statement to reflect the two unsuccessful 2015 attempts of the sampler installation. Also provide additional details as to why access to two locations could not be achieved and discuss proposed means to access them during future sampling events.

56	6.0 Cap Maintenance, Page 6-1	<p>Modify the text to read “The maintenance of the cap includes repair, enhancement, or other contingency actions as appropriate depending upon physical and/or chemical monitoring data or other information that indicate a pattern of cap degradation.”</p> <p>Note that if the need for cap repair is indicated by either the physical or chemical monitoring performed as part of this Plan and/or other outside factors (suspected damage by an unexpected outside force of man or nature), repair of the cap should be performed even if the exact “cause” of the damage or cap degradation is not known. It is understood that knowing the cause of the damage will assist with more effective repair; however, it is not acceptable to postpone any repair at all until and unless the cause of the damage is known.</p> <p>Revise section to indicate that the cause of damage/degradation would be sought; however, action would be taken to repair the cap to function as originally intended. Repairs could be performed in a phased fashion, but the ultimate goal is expedient cap repair.</p>
57	6.1 Cap Maintenance Trigger, Page 6-1	See Comment 34 above and revise section accordingly.
58	7.0 Reporting, Page 7-1	Delete the “two” from the first sentence and modify the text to read “Detailed data summary reports will be submitted following completion of each of the physical and chemical monitoring events...”
59	Figure 2	Please revise to provide the units for the elevations on Figure 2.